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THESIS

A STUDY OF THE IMPLEMENTATION OF
CURRENT COST ACCOUNTING IN THE REPUBLIC
OF KOREA ARMY PROCUREMENT SYSTEMS

by

Joo Man Lee

June 1986

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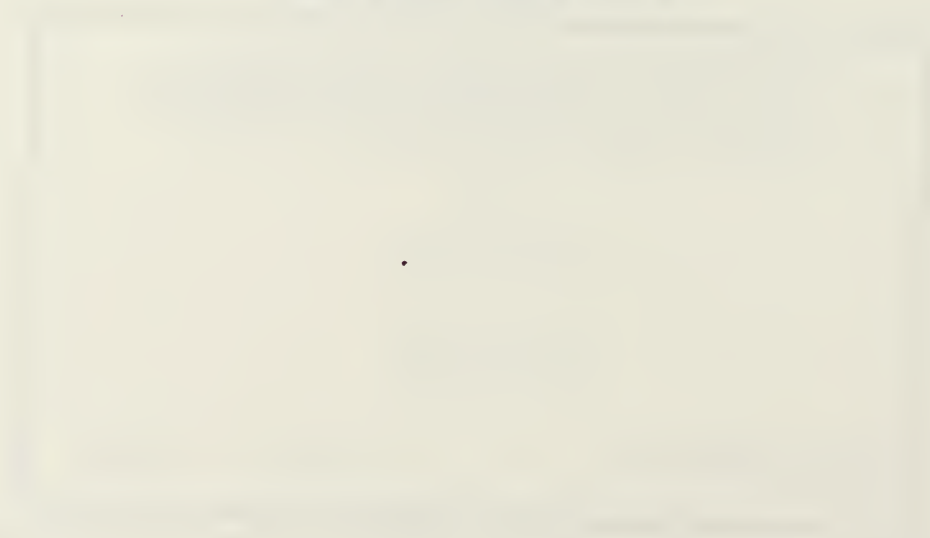
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A Study of the Implementation of Current Cost Accounting in the
Republic of Korea Army Procurement Systems

by

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Major, Republic of Korea Army
B.S., Korea University, Seoul, 1982.

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ABSTRACT

This thesis examines the methods proposed and employed to recognize the effects of inflation in financial reporting in Republic of Korea Army (ROKA) procurement. A discussion of the nature of the ROKA procurement system and two alternatives to historical cost financial statements are presented. The concepts, methods and procedures of the historical cost/constant dollars financial statements are described. The proposal for current cost/constant dollars financial statements is presented and emphasis is given to the description of four problems in existing ROKA procurement due to using inadequate accounting information.

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Everything for my God, Jèsus Crist.

I. INTRODUCTION

Over the last several years there has been a growing concern within the Republic of Korea Army (ROKA) over procurement practices. Throughout this period rising inflation and increased defense quality have faced the spectre of a limited defense budget. A wide variety of industry practices and diverse government regulations clouded the procurement process and made cost and pricing data difficult to evaluate.

There is a manual which consolidates laws, regulations and guidelines related to procurement. The title is the Budgeting and Accounting Laws and Established Rules. Most of the laws and established rules in the manual are related to the procedures of procurement and cost accounting principles to achieve uniformity and consistency in estimating, accumulating and reporting costs on all government contracts.

The purpose of this thesis is to examine the manual's provisions regarding cost accounting practices, especially in conjunction with inflation effects, and to examine the implementation of the current cost/constant dollar financial statements in the ROKA procurement system. The scope of this thesis is limited by the fact that the writer must translate the Korean document into English. Therefore, the writer has translated only those selected provisions which are related to the topic.

There also exist geographical limitations on testing the proposal empirically in the country's real situation. But the topic is examined theoretically and explained by means of a case study. Therefore, further study will be needed to weigh the costs and benefits associated with implementation of the the proposal.

Although an attempt has been made to be as comprehensive as possible, space has prohibited this study from stating and analyzing every issue in the manual. Only those issues and problem-areas which are related to inflation accounting are presented and explored.

A. OUTLINE OF THESIS

Chapter II serves as a foundation for the thesis. Terms are defined and the nature of ROKA procurement is described in the first two sections. The third section describes Budgeting and Accounting Laws and Established Rules, which is used as a reference and guide for ROKA procurement. The fourth section examines procurement processes and methodologies and contract types. The final section evaluates cost accounting practices in the manual and presents some problems which need improvement or revision.

Chapter III contains a discussion of development of inflation accounting. The first three sections illustrate inflationary conditions in both the United States (U.S.) and the Republic of Korea (ROK). The problem of inflation is also explained in terms of both social and accounting implications. The fourth section presents an introduction of two alternatives to historical costs (HC) financial statements. Historical cost/constant dollar (HC/CD) financial statements report the HC of assets, liabilities, owners' equity, revenues, and expenses at their current dollar equivalents. And current cost/constant dollar (CC/CD) financial statements report assets and expenses at current cost rather than historical cost. The fifth section explains four methods of revaluing the current cost of assets. These are direct pricing, price indexing, functional pricing and appraisals. The final section shows depreciation in the CC/CD model.

Chapter IV analyzes current law in the manual. The resultant analysis shows that current law is not likely to support the ROKA procurement system in dealing with inflation

effects. The problems are fourfold. First, the law has weaknesses in evaluating the financial capability of government contractors. Second, it is hard to estimate reasonable profit rates for contracts under the current law. Third, the government contracting officer may lose a chance to use more accurate financial information in the estimation of project costs. Finally, a problem may exist in negotiating the contract amount in cost reimbursement type contract.

Chapter V constructs a case study to explain and illustrate how inflation accounting will improve the ROKA procurement system's ability to deal with the four problems discussed in Chapter IV. The first section describes the background of the case study. The second section explains implementation procedures for HC/CD balance sheets and income statements and shows how the purchasing power gain or loss can be computed. The third section explains implementation procedures for CC/CD financial statements and shows how the holding gain or loss can be computed. The final section evaluates the results of the case study.

Chapter VI provides conclusions as to the anticipated value of the CC/CD financial model in ROKA procurement and offers some comments on implementing the model in the ROKA procurement system. Finally, a summary of the thesis is presented.

II. THE ROKA PROCUREMENT SYSTEM

A. DEFINITIONS

Procurement is to be considered synonymous with contracting as a subset of the acquisition functions.

Acquisition means the acquiring by contract, with appropriated funds, of property or services by and for the use of the government through purchase, lease, or barter, whether the property or services are already in existence or must be created. Acquisition includes such related functions as determination of the particular public need, solicitation, selection of sources, award of contracts, contract financing, contract performance, and contract administration. [Ref. 1: p. 14]

B. NATURE OF THE ROKA PROCUREMENT

In examining the ROKA Procurement System, there could be several approaches depending on the purpose for the examination. One way is to compare the system to those of other Korean military services or to those of other countries. The author, however, has focused on the differences between public and private procurement in the Republic of Korea (ROK) because the ROKA procurement is a subset of public procurement. Thus its scope, methods, procedures, rules and principles are provided within the public procurement, with some features which are special and unique to the Army. Public and private procurement are generally similar, particularly with respect to fundamental solicitation and award processes. They differ in many areas, primarily because of the sovereignty of the government and oversight by the public. Buyers and sellers in the private sector are expected to comply with general legal and ethical restraints concerning competitive behavior and prohibited actions in restraint of trade. Additionally, buyers and sellers in government procurement are subject to specific prohibitions by laws, regulations and established rules. Equality between buyer and seller in private contracting generally

exists, with the exception of the influences of comparative size, economic strength and technical knowledge. However, the government as a buyer is the rule maker in virtually all circumstances. The government has the capacity to write contract clauses, procurement regulations and management procedures in addition to exercising its size and economic strength. Significant differences between public and private procurement are discussed in the following subsections. [Ref. 2: pp. 5-9]

1. Authority

The fundamental objective of public policy in ROK is to maintain equality of status of private parties in terms of legal standing. Nevertheless, size, economic strength, technical knowledge, and other factors often differentiate buyers and sellers. These differences could give advantages to either party. The government, as buyer, has the advantages of size and economic strength. Superior technical knowledge could be held by either party. However, the government, as sovereign, is the rule-maker in virtually all circumstances. Its capacity to write contract clauses, procurement regulations, and management procedures is nearly unassailable. It acts through statute, executive order, agency regulation, and management instructions. Additionally, the government can change its corporate mind at any time before, during or after contract award. Its changing perceptions and policies affect procedures, clauses, technical content, costs, and desired procurement results. While negotiations provide for adjustment for change, the change itself is unilateral at the buyer's discretion. The preeminence of the sovereign is broadly accepted. It is believed to be in the public interest, but it should not be ignored by participants in the procurement process. [Ref. 3: pp. 19-21]

The government contracting officer must have "express authority", delegated via a written warrant, in order to obligate the government and enter into a contract. Commercial firms are also subject to the interpretation of "implied" and "customary" authority. For example, a firm's president may be held responsible under a condition of implied authority for his actions if the company has hired him to "run the business" or do everything necessary or proper and usual in the ordinary course of business. Additionally, a firm's agent may be held responsible for his actions (and thereby legally obligate his company) under a condition of customary authority if most similar agents in similar companies customarily perform equivalent actions.

2. Socio-economic Objectives

Government contracts are often used as instruments for meeting social and economic objectives directed by regulation or statute. Examples include the Small-Middle Business Protection Act, Consumer Protection Act, and Air Pollution Abatement Act. [Ref. 3: p. 350]

A commercial company is not directed to undertake corporate social responsibilities by law. However, a business firm may formally or informally support social and economic programs by direct contributions for the purpose of taxable deductions. [Ref. 2: pp. 5-9]

3. Formal Advertising

Government regulations rigidly define agency action in procurements via formal advertising as to method of solicitation, receipt of proposals, irrevocability of bids, formal bid opening, public display of bid abstracts and apparent winner and award. Formal advertising must be used in all cases by means of nation-wide daily newspapers and government routine publications except when the contracting method is not bidding. The commercial sector utilizes competitive bidding frequently but does not constrain itself to the same rules as government. [Ref. 3: pp. 49, 50]

4. Process Complexity

Complexity is present in all purchasing processes because of the necessity for reflecting the interests and concerns of each party in a contract. The relatively simple and well known purchasing procedures of private industry have been modified in detail in those regulations published for the guidance and direction of government contracting personnel. Since procurement processes involve innumerable variations depending on the nature of the acquisition, of the industry, and of the particular relationship to be established, the volume of specific policy and procedure creates complexity. The need for complexity is increased by the incorporation of special provisions intended to advance, or substitute for, competitive procurement. It is also increased by incorporation of social and economic objectives into the relationship. [Ref. 3: pp. 1-2]

5. Contractor Remedies

In commercial transactions contractors may sue for breach of contract or submit a dispute to arbitration, if provided for in the contract. An unsuccessful bidder for a commercial contract has no appeal unless there is evidence of fraud. [Ref. 22: pp. 581-585]

Contractors have a host of remedies available to them in the field of government contracting because of public oversight of government activities. Losers of formally advertised bids may submit a protest to the person who has responsibility for oversight of the contracts. Contractors who are not satisfied with a contracting officer's settlement may submit a claim to the appropriate secretary of the department or directly to the court under current laws. Additionally, contractors seeking extraordinary relief due to damage from a government action may submit a claim against the government. Even though the contractor has a number of appeals routes available, if the

contract work has not been completed, the contractor has no right to cease operations [Ref. 3: pp. 347-349].

6. End Objectives

In a sense, the greatest distinction between private sector and government procurement is in their end objectives. The presence of the profit and loss standard against which private management can measure success is absent in public enterprise. Purchase decisions by industry respond directly to production cost and productivity factors in support of competitive industrial effort, but the motivating forces of profit and loss are not encountered by the public manager. The industrial buyer can invariably assess achievements in terms of profitability or productivity by observing cost, price and sales relative to competitors. By contrast, government procurement is afflicted with multiple objectives and lacks objective standards of success such as profitability. Objectives may include technical, schedule, or cost level achievement, but they also include a multiplicity of social/economic objectives or labor policies which degrade the usefulness of clear signals from objectively measured costs or end results. [Ref. 3: p. 9]

These distinctions between private procurement and public procurement require special mechanism of procurement, with a well-defined reference and guidance.

C. THE REFERENCE AND GUIDE FOR THE ROKA PROCUREMENT.

The manual of Budgeting and Accounting Laws and Established Rules [Ref..3], provides guidance to the government contracting officer. Acquisition for the government can become a complex affair because there are many statutory requirements and executive orders that foster social and economic aims other than acquisition. To stay current in this dynamic environment, the acquisition manager needs a single reference to governmental, Defense Department and other directives regarding acquisition.

The purpose of the manual is to provide, in a single reference, a synopsis of current and important topics relevant to public acquisition. As with any other reference manual, this manual will need to be updated and supplemented to reflect changing laws and regulations related to government budgeting, accounting and contracting practice. The manual includes sections dealing with the Law of Budgeting and Accounting, the Execution Law of Budgeting and Accounting, the Contract Administration Rules, and Established Accounting Rules. These are the most important sections in terms of this thesis, and especially those concerning cost accounting practices in ROKA. [Ref. 3]

1. Historical Background and Content of the Manual

Managers and potential managers in the acquisition field should utilize this manual to perform their job legally. It covers all of the laws, regulations and established rules which are concerned with the area of public budgeting, accounting, contracting and purchasing.

In 1979, the ROK Defense Department combined in a single manual all of the laws, regulations and cases related to budgeting, accounting, contracting and purchasing. In 1983, it reorganized the manual in conjunction with the revision of a great deal of the laws and of the government accounting system. The ROK defense department spends more than one third of the total annual government expenditures. Therefore it is very important to manage defense resources efficiently and effectively.

The purpose of the manual is to be utilized as a guide to those who work in the area in order to manage defense resources with efficiency and effectiveness. It combines laws, presidential executive orders, presidential secondary orders, established rules, special established rules, instruction and notification, and questions and answers which are related to budgeting and accounting as of

30 June 1983. The laws in the manual are divided into the following categories:

1) Accounting laws

- Accounting general principles
- Special established rules
- Large-scale construction guidance
- Defense industry standards
- Foreign-military purchasing guidance
- Accounting administration standards
- Accounting responsibility code
- Procurement funds management guidance
- Government owned security management guidance

2) Established accounting rules

3) Special established accounting rules

4) Instructions and notification from the Defense Department, the Board of Public Auditing, the Board of Economic Planning, the Treasury Department, the Construction Department, and the Science and Technology Division.

5) Questions and answers

Together they form a single reference that will provide a review of current important topics relevant to military acquisition.

D. PROCUREMENT PROCESS AND METHODOLOGY IN ROKA

1. Procurement Process

Procurement begins by identifying needs and their funding. All procurement, large or small, routine or complex, must be initiated by the identification of a current or predictable need. The nature of the need and its relationship to the economy becomes the principal guiding force in the development of the procurement planning. One aspect of the needs-determining process that may cause confusion is the distinction between routine support requirements and special or nonroutine generation of demands. Procurement action may be facilitated for many

types of needs that arise regularly as a result of established programs like inventory replacement, ordinary operating procedures, maintenance, and repair. On the other hand, needs arise that are unique, unexpected, or a part of major systems development. In these situations, funding problems, strategy selection and source decisions may be complex and may involve substantial management effort, technical expertise and time. [Ref. 3: pp. 9-10]

The planning phase, the second step of the procurement process, is principally where procurement strategy is developed. Critical to the strategy decision is the translation of perceived needs into detailed statements that will be incorporated into one or more individual procurement actions. [Ref. 3: pp. 11-12]

The next step is solicitation, selection and award of contracts.

The final phase, identified as contract administration, is the time when outcomes are reached and the success of the strategy is discerned. This final segment often has a far greater time frame than the other segments of the process. During the contract administration phase, various management actions occur and most procurement resources are consumed. Also within this phase, many additional procurement actions may be generated, defined and executed. Completion, delivery and acceptance, payment, and warranties also occur during contract administration. [Ref. 3: pp. 8-20]

2. Procurement Methods

The method of procurement is one basis for considering procurement activities. It is derived largely from the procurement statutes. Four methods are recognized that involve distinguishable types of activity. They are sealed bidding, competitive negotiations, noncompetitive negotiation and small purchases. Sealed bidding procurement uses a

highly structured set of procedures that lead to formal bid openings. The opening is followed by responsiveness and price evaluation techniques entirely different from the techniques and procedures pertinent to the other methods. The manual specifies that contracting agencies shall obtain full and open competition through the use of competitive procedures. It then defines competitive procedures. One form of competitive procedure is solicitation using sealed bids. When time permits its use, the sealed bidding procedure is to be used. The award will be based on price and other price-related factors after considering the solicitation, submission of bids, and evaluation processes necessary to make the award. When using this procedure, the agency should reasonably expect to receive more than one sealed bid in response to its solicitation and should not consider it necessary to conduct discussions with the sources submitting bids. [Ref. 3: pp. 47-56]

Competitive negotiation is pertinent for requirements that are less well defined than those for which sealed bidding is applicable. In other words, it is considered appropriate when sealed bids are not pertinent to the requirement. With competitive proposals it is an expectation of the agency that it would hold discussions with each of the offerors, after receipt of their proposals, in the process of arriving at an agreement prior to the award of a contract. However, under the competitive proposal procedure, the agency is required to reserve the right to award its contract without discussions. But such an award should result in the lowest overall cost to the government. [Ref. 3: p. 56]

The manual enumerates circumstances under which the contracting agency is allowed to conduct procedures other than competitive procedures. The situations in which a noncompetitive negotiation should be made are summarized below :

- 1) When only one responsible source is available and no alternative type of property or services will satisfy the needs.
- 2) Under unusual and compelling urgency, when the government would be seriously injured unless the agency limited the number of solicited sources.
- 3) When restriction of an award to a particular source is required because of :
 - The necessity to maintain a particular source to ensure its availability in the event of national emergency or
 - The need to establish or maintain an essential engineering research or development capacity provided by a nonprofit institution.
- 4) When the item is a brand name commercial item for authorized resale.
- 5) When national security requires that disclosure of the requirement be limited to the particular source(s) from which the bid or proposal is solicited.
- 6) When the head of a department determines it to be necessary in the public interest to use procedures other than competitive procedures. [Ref. 3: pp. 57-59]

Small purchase actions are conducted only when the contract amount does not exceed 1 million won (the unit of Korean currency). This is distinguished because small purchase actions are not only small in magnitude but highly repetitive in character. Furthermore, most have a short reaction time.

3. Contract Types

Familiarity with the range of contract types is important for effective procurement management. The contract provides for payment to the supplier for work performed. It sets up the basis upon which payment is made. In the firm-fixed price contracts, the basis is the predetermined price. In the cost reimbursement contract, cost incurrence in pursuit of the specified project is the basis. The most common type of contract is the firm-fixed price contract. The ordinary purchase order, when executed by both parties, is an example. Under it each party performs specified duties. [Ref. 3: p. 19]

The structure of a contract becomes critical when the following circumstances are present : (1) The purchasing manager seeks to acquire nonstandard supplies or services, and the period of performance is likely to be long, during which time the two parties must have a working relationship that facilitates updating or modification of the agreement [Ref. 3: p. 20]. (2) The proposed undertaking involves a large sum of money coupled with a high degree of complexity in the technological effort required [Ref. 3: pp. 113-119]. (3) The performance of the undertaking is risky because of technological or other sources of uncertainty, and some sharing of that risk between buyer and seller is necessary [Ref. 3: p. 21]. (4) The circumstances of the purchase action are such that the buyer seeks to obtain performance cost data from the supplier [Ref. 3: p. 81]. Under these situations, the contracting agencies are allowed to select cost reimbursement contracts by provision 70-17 of the Law of Budgeting and Accounting [Ref. 3: p. 21].

Under both the cost reimbursement contract and the firm-fixed price contract, the obligations of a supplier to perform the work required are essentially similar. The difference is expressed best in terms of the assumption of risks by the two parties. In the cost contract, the buyer assumes most of the financial risks of nonperformance or delayed performance.

E. COST ACCOUNTING PRACTICE

The focus of this thesis is on the cost accounting practices in the manual. Pertinent laws and rules are summarized in Appendices A to C. In examining these rules, the writer found some areas in apparent need of revision. Even though ROK has been experiencing continuously high inflation, owing to the policy of rapid-economic growth since the 1960s, there is no systematic means for dealing with inflation effects on procurement contracts. The manual

does include some mechanisms to reflect inflation effects in ROKA procurement in provisions 93 and 95 of the Execution Law of the Budgeting and Accounting (see Appendix A). But these are not sufficient to deal with inflation effects, as will be shown later. [Ref. 3: p. 48] As shown in appendix B, depreciation cost is an element of manufacturing overhead costs in computing the estimated cost of a project. But there is no specific instruction whether to use historical costs of fixed assets or inflation adjusted costs of fixed assets as a depreciation base. Thus, the ROKA procurement system seems to need further study aimed at resolving issues associated with inflation accounting.

III. INFLATION ACCOUNTING DEVELOPMENT

A. THE CASE OF THE UNITED STATES

Immediately after World War 2, with the removal of price controls that had held prices to arbitrary levels, there was a burst of inflation in the U.S.. Annual price increases thereafter stayed mostly within 3 to 5 percent per annum until the escalation of hostilities in Southeast Asia in 1966, when inflation again erupted. In 1971, the U.S. departed from the convertibility of the dollar into gold, and the major nations adopted floating exchange rates in place of normally fixed exchange rates. Double-digit inflation, as measured by the wholesale price index or consumer price index, has been an actuality or a threat throughout the world. [Ref. 4,: pp. 63-70]

In view of continuing inflation in the U.S., numerous proposals had been made to modify accounting procedures to recognize that the traditional assumption of a stable measuring unit was no longer valid. In December 1974, the Financial Accounting Standards Board (FASB) issued an exposure draft of a proposed statement entitled "Financial Reporting in Units of General Purchasing Power". In essence, the proposal would have made mandatory the supplemental reporting

the U.S. in terms of units of general purchasing power of the U.S. dollar, for each statement presented: Total revenue, depreciation, net purchasing power gain or loss from holding monetary assets, income from continuing operations, net income, earning per share, dividends per share, inventory, working capital, net plant and equipment, total assets, and total common stockholder's equity. [Ref. 5: p. 33]

ON March 23, 1976, the Securities and Exchange Commission (SEC) issued Accounting Series Release No. 190. SEC Release 190 required disclosure of replacement costs for inventory items and depreciable plants by registrants with

\$100 million or more (at historical cost) of gross plant assets and inventories. As defined by the SEC, replacement cost, or current replacement cost, was "the lowest amount that would have to be paid in the normal course of business to obtain a new asset of equivalent operating or productive capacity". [Ref. 6: p. 31]. Specifically required for disclosure were :

... Current replacement cost of inventories at each fiscal year end for which a balance sheet is presented. If current replacement cost exceeds net realizable value, the amount of excess should be stated.

Cost of sales based on what it would have been if current replacement cost had been used at the time sales were made for the two most recent years.

Current cost of replacing (new) the productive capacity, together with the current depreciated replacement cost of the productive capacity at each fiscal year-end for which a balance sheet is presented.

Depreciation, depletion and amortization estimated on the basis of average current replacement cost of productive capacity for the two most recent fiscal years.

Methods used to arrive at the above, and an indication of what consideration, if any, was given in inventory and cost of sales disclosure to the related effects on direct labor, repairs and maintenance, utility and other indirect costs as a result of the assumed replacement of productive capacity. [Ref. 7: p. 59]

In September 1979, almost five years after publication of its proposal, the FASB promulgated Statement 33, which required large companies to publish supplementary information about the impacts of inflation on financial statements. The specific requirements of this statement are summarized below.

It applies to public enterprises that have inventories, property, plant, and equipment of more than \$125 million or total assets of more than \$1 billion. The changing prices information is separate and supplements the historical cost information. A summary of the required disclosures for companies that meet the size test and having fiscal years ended on or after Dec. 25, 1979 are as follows:

1. Constant dollar information
 - a. Income from continuing operations on a historical cost/constant dollar basis
 - b. The purchasing power gain or loss on net monetary items
2. Current cost information
 - a. Income from continuing operations on a current cost basis
 - b. The current cost amounts of inventory, property,

- plant, and equipment at the end of the fiscal year
- c. Increases or decreases in the current cost amounts of inventory, property, plant, and equipment, net of inflation
- 3. Notes to supplementary information
 - a. The principal types of information used to calculate the current cost of inventory, property, plant, equipment, cost of goods sold and depreciation, depletion and amortization expense
 - b. Any differences between (1) the depreciation methods, estimates of useful lives, and salvage values of assets used for calculation of historical cost/constant dollar depreciation and current cost depreciation and (2) the methods and estimates used for calculations of depreciation in the primary financial statements
- 4. Five-year summary of constant dollars
 - a. Net sales and other operating revenue
 - b. Historical cost/constant dollar information
 - c. Current cost information
 - d. Other information. [Ref. 30: pp. 2-4]

In November 1984, FASB Statement 82 rescinded the requirement that companies disclose historical cost data adjusted for general price level changes but retained the current cost/constant dollars disclosures [Ref. 8: p. 1457]. Although general price-level adjustment information is no longer required, it was also stated by the SEC that it did not intend to limit the development of general price-level adjustments, and a familiarity with that model is essential in order to understand the limitations of the conventional historical cost model and the characteristics of the current cost model [Ref. 9: p. 111]. The goal stated by both SEC and FASB was to better satisfy the disclosure needs of individual investors and others external to the firm.

B. THE CASE OF THE ROK

1. Inflation

The ROK economy has grown considerably over the past 20 years. Through four consecutive five-year economic plans, its economic structure shifted from an agricultural to an industrial orientation. This change required a substantial use of energy and the growth rates of both gross national product (GNP) and energy use have constantly been at high levels. Since the ROK depends heavily on imported oil, the

two major energy shocks affected the ROK economy in many ways. Rising oil prices and government driven high economic growth policies through the five-year economic plans led to easy monetary and fiscal policies and high inflation. As shown in Table I, the country experienced 16 percent annual inflation over the entire period if the implicit GNP deflator is used, with a low of 12 percent per year during 1955-1960 and a high of 19 percent during the next five years, in which rapid growth was initiated.

It is anticipated that the ROK will experience inflationary situations for the future as long as the country maintains government driven economic policies which pursue a high level of economic growth.

TABLE I
INFLATION RATES (ROK)

Period		Annual Percentage Increase			
From	To	GNP Deflator	Wholesale Price Index	Seoul Consumer	Farmers' Prices Paid
1955	1960	11.9	10.2	10.6	n. a
1960	1965	19.3	17.2	15.4	14.3
1965	1970	13.7	7.9	11.4	14.1
1970	1975	17.1	18.9	15.1	18.9
1975	1980	17.4	18.2	15.9	19.1
1981	1985	15.1	16.4	13.2	16.8

(Sources: Refs. 13 and 25)

C. THE PROBLEM OF INFLATION

The avoidance of inflation is often taken as a prime objective of banking and monetary policy. However, in more

recent years there have been hints that price stability may not in itself be so obviously desirable, if it conflicts with other objectives, such as the rate of growth. The most general problem of inflation is probably a social one. Some people either are living on fixed money incomes or are unable to adjust their money incomes sufficiently to cope with the rise in prices, with the result that they suffer a decline in their real incomes. Those who hold cash and other monetary assets will lose purchasing power. Those who borrow will gain purchasing power. The result of inflation may not only be to reduce the real incomes of people but also to lead to reallocation of resources among people. [Ref. 23: pp. 19-21]

The problems of inflation extend to accounting also. The objective of accounting is to record and report the activities of a firm with respect to the use of assets entrusted to it by outsiders [Ref. 10: p. 31]. Insuring that all transactions were recorded in an objective and verifiable manner is one of the principal purposes of accounting. To accomplish this goal, there evolved a concept of valuation which recognized assets at their cost to the firm at the time of acquisition. This basic concept of historical cost accepted the purchase price, unadjusted for any subsequent changes in prices [Ref. 11: p. 186], as the basic element in determining income and the net worth of the firm.

During periods of inflation, the highly desired qualities of objectivity and verifiability possessed by historical costs were no longer sufficient by themselves to meet the needs of statement users [Ref. 12: p. 17]. Many authorities felt that the existing system did not meet the criteria of relevance, materiality, and comparability. For example, the original prices of identical factories constructed in 1960, 1970, and 1980 would not be of value to statement users in determining the ability of the firm to replace these plants and to continue in business.

D. ALTERNATIVES TO HISTORICAL COST FINANCIAL STATEMENTS

The conventional accounting model assumes either a stable monetary unit or that changes in the value of money are not material [Ref. 8: p. 30]. It also assumes that transactions are to be recognized at their cost at the time of the transaction and that subsequent changes in value are not recognized until realized. However, these assumptions are no longer valid under anticipated inflation conditions.

Historical cost (HC) financial statements aggregate historical dollar amounts representing assets, liabilities, owners' equity, revenues, expenses, gains, and losses, just as though each dollar had the same purchasing power. However, if prices were changing during the periods when those dollars were recorded, such dollars would have unequal purchasing power [Ref. 8: p. 1441].

The historical cost/constant dollars (HC/CD) reporting model was developed to resolve the HC problem of aggregating dollars that have different purchasing power. This model also provides background for the current cost/constant dollar (CC/CD) model discussed later [Ref. 8: p. 1441]

1. HC/CD model

The objective of the HC/CD model is to report the HC financial statement elements in dollars of equivalent purchasing power (CDs). As a result, it makes all of the reported amounts comparable in terms of the measuring unit. The restatement of each HC amount to its HC/CD equivalent amount involves the use of a general price level (GPL) index. [Ref. 8: p. 1442]

General price change is the average of all specific price changes in a period. General Price Level (GPL) changes are the result of a change in the purchasing power of the dollar over time. This change in purchasing power complicates the measurement of both income and net worth, for the unit of measure has become elastic. A uniform measurement standard can, however, be achieved through the use of a price index which relates a base period of measurement to the current period by recognizing the difference in the exchange value of the dollar. Such an index is a composite of all specific price changes, which are averaged to produce a GPL index [Ref. 8: p. 1442]. Currently the most commonly

recognized general index in ROK is the Gross National Product Deflator (GNP Deflator) [Ref. 13].

Specific price changes are simply increases or decreases in the prices of specific goods and services. It is a reflection of the changes in the prices of individual goods over time. While during inflation there is an overall loss of purchasing power of a dollar, not all goods change prices at the same rate or even in the same direction [Ref. 14: p. 20].

In the HC/CD reporting model, the CD restatement amount is calculated by the multiplication of the HC amount by a CD restatement ratio. The numerator of the CD restatement ratio is the index at the end of current period. The denominator of the CD restatement ratio is the price index on the original transaction date. For example, assume equipment was acquired at a cost of \$200,000 as of 1 Jan. 1980, when the GPL index was 110. The HC balance sheet at 31 Dec. 1985, when the GPL index was 132, reported the cost of \$200,000 and accumulated depreciation of \$40,000. The CD restatement is shown in Table II. The difference between HC of equipment and HC/CD of equipment, \$32,000, is simply a restatement of historical cost in units of constant purchasing power. It is not a gain in any sense. [Ref. 8: pp. 1444-1445]

a. Monetary versus Nonmonetary Items

In the illustration in the preceding subsection, the \$200,000 HC of the equipment was restated as HC/CD of \$240,000. However not all assets and liabilities will be so restated -- only nonmonetary items. Therefore, it is important to recognize a basic distinction between monetary and nonmonetary items. The following quotation provides a clear distinction between monetary and nonmonetary items

Monetary items are cash and claims receivable or payable that are stated in a fixed number of dollars. The fixed number of dollars does not change regardless of changes in prices. Examples of monetary items include cash, accounts receivable, notes receivable, and other receivables stated

TABLE II
HC/CD AMOUNT

Item	HC at 31/12/85	CD restatement ratio	HC/CD restated on 31/12/85
Equipment	\$200,000	132/110	\$240,000
Accumulated depreciation	(40,000)	132/110	(48,000)
Book value	\$160,000		\$192,000

in a fixed number of dollars; and accounts payable, notes payable, bonds payable, and other payables stated in a fixed number of dollars. Neither inflation nor deflation affects the number of dollars to be received or paid for a monetary item, although the "value" of those dollars is changed (i.e., with inflation the dollars become cheaper). Monetary items are reported only on the balance sheet.

Nonmonetary items are those financial statement items that are stated in a number of dollars that is not fixed. All items that are not classified as monetary are classified as nonmonetary; the number of dollars they command changes. Examples of nonmonetary items include inventories, operational assets, investments in stock, and common stock outstanding. Nonmonetary items are reported on the balance sheet along with monetary items. All revenues, expenses, gains, and losses reported on the income statement are nonmonetary items. [Ref. 8: p. 1445]

Another important distinction between monetary and nonmonetary items is that monetary items cause purchasing power gains or losses when the GPL changes. "Purchasing power gains and losses arise because monetary items are fixed in terms of the number of dollars they command" [Ref. 8: p. 1448]. For example, if \$200,000 is borrowed when the GPL index is 110 and is repaid when the GPL index is 132, the borrower experiences a purchasing power gain of \$40,000 ($200,000 \times 132/110 = 240,000$ minus 200,000 equals 40,000) because the 200,000 repaid is in

dollars of lower purchasing power (i.e., cheaper dollars). For the same reason, the lender experiences a purchasing power loss of \$40,000. [Ref. 4: pp. 67-69]

Because HC/CD reporting retains the traditional HC results but restates those results in terms of CDs, it enables readers of financial statements to compare HC amounts in a common measuring unit. The HC/CD model also reports the purchasing power gain (or loss) on net monetary items which is not reported under HC accounting. However, the HC/CD model does not report current values. The GPL indexes used for HC/CD restatements do not take into account the specific price changes of the individual assets and liabilities of the entity. Only by coincidence would HC/CD amounts equal the market values of the individual assets and liabilities of the entity. [Ref. 6: P. 69-70]

2. CC/CD model

CC/CD accounting models substitute current costs for HC amounts in the financial statements. This means that a CC/CD balance sheet reports the current cost of each asset (instead of HC). The income statement reports expenses at CC rather than HC. Thus, CC accounting changes the attribute measured from historical to current cost [Ref. 8: p. 1457].

The CC/CD model can be understood by comparing the information provided by the HC and HC/CD model. During periods of changing prices, the HC model is conceptually deficient because it does not report the effects of price changes. The HC/CD model is similar to the HC model except for one major difference. The HC/CD model reports the effects of general price level changes on the HC financial statements as shown in the preceding section. By doing so, it avoids aggregating dollars of different purchasing power. However, the HC/CD model does not report the effects of specific price changes on the company. Therefore, the HC/CD model does not report current cost measures of income and assets. The CC/CD model is designed to report income and assets at current prices and measure them in constant dollars. [Ref. 8: pp. 1457-1459]

Objectives of the CC/CD model are twofold. One relates to the balance sheet and the other to the income statement. The objective of the CC/CD balance sheet is to report the current cost of replacing each asset in terms of current prices. The objective of the CC/CD income statement is to report distributable income. A company can distribute this amount in dividends without reducing the future operating capacity of the company. This objective is accomplished by measuring expenses at the CC of the assets and services used in the revenue earning process. Proponents of CC/CD reporting argue that operating income from CC/CD model measures the distributable income of the entity in constant dollars. The importance of CC/CD income as a measure of distributable income can be seen by comparing it to HC income. During periods of inflation, CC depreciation usually is more than HC depreciation because of the increase in the cost of operational assets. When the higher amount of CC depreciation is matched against revenue, CC/CD income is lower than HC income. A similar effect occurs when the costs of inventory and other nonmonetary assets are expensed. If a company distributes all of its HC income as dividends, part of the dividends would be paid from the contributed capital of the entity. This would erode the capital of the company. The CC/CD income statement also reports both the purchasing power gain or loss on net monetary items shown in the preceding section and holding gains or losses which will be shown Chapter V [Ref. 8: p. 1459].

Measuring current cost is the most important and difficult task for the CC/CD model. Monetary assets are already at current value, since they are measured in dollars and the receivables are adjusted by allowances. Calculating the current cost of inventories seems to be relatively easy because firms are continually purchasing and manufacturing large-volume items. Perhaps the greatest problem in this

model is the calculation of the current costs of fixed assets. Four approaches for developing CC data can be considered: (1) direct pricing, (2) price indexing, (3) functional pricing and (4) appraisals. These approaches may be used singly or in combination. The judgement on an appropriate method for measuring current cost of fixed assets depends on several factors.

First, the nature of the industry will be instrumental in determining which valuation methods should be employed. In industries in which output increases are responsive to changes in the number or technology of individual machines, such as machine shops, auto manufacturers and textile producers, price indexing (which will be discussed later) can be considered as an appropriate and reasonably efficient method of computing current costs. In these industries, technological changes are traceable to individual pieces of equipment, rather than to the entire plant. But, in industries in which output increases are responsive to changes in technology of the entire plant, such as oil refineries and chemical processors, functional pricing (which will also be discussed later) is the most efficient method of determining current cost. [Ref. 15: p. 30]

Second, the nature of the assets being valued also requires careful examination. Different groupings, such as office equipment, structures, etc., can be made; and the most efficient revaluation method can be applied to each group. For example, groups of numerous low priced items, such as tools or office equipment, are not affected by rapid technological obsolescence. Price indices can be applied to such groups at little expense and will produce reasonable approximations of current cost. [Refs. 16: p. 22 and 17: pp. 54-55]

Finally, the completeness of the firm's asset records should be evaluated. Specific data for each asset item are needed and should include the original purchase date and cost, whether it was new or used, the depreciation basis and life, and a complete identification and description. While these data are a normal part of most firm's accounting records, there are indications that many firms have incomplete records. Thus before employing any revaluation method, the quality of records must be established ; and, if material inaccuracies are found, corrections must be made. If essential data are not available, then methods other than price indexing must be used. [Ref. 18: p. 30]

E. APPLICATION OF SPECIFIC METHODS

1. Direct Pricing

The best measure of current cost, both in terms of accuracy and objectivity, is probably direct pricing. Catalogues and vendor quotations, which may be already available in the purchasing and engineering departments of most firms, can serve as the initial data input. The basic prices can then, if necessary, be adjusted to recognize any additional replacement expenses such as delivery and installation. Little additional expense will be incurred in using this method. Unfortunately, the range of asset items which can be revalued by this method is somewhat limited. Items which have ready markets and experience slow technological change are ideal candidates. Examples of this type of item include furnishings, standard machinery and equipment.

Structures, specialized equipment and processing plants would be both difficult and very costly to revalue by this method. For items in the latter group, one of the other methods would be more efficient. [Ref. 9: p. 90]

2. Price Indexing

Price indexing is the most frequently discussed method of revaluing fixed assets to current replacement costs. It is

simple to employ, objective, and verifiable. A major attraction of this method is that, through the use of data processing equipment, the task can be accomplished quickly and inexpensively. There are some readily available sources available in the ROK such as the GNP deflator, wholesale price index, Seoul consumer price index and index of farmers' prices paid.

The basic application of the method is quite simple. Assets must be grouped into pools of similar types. The objective of the grouping process is to permit the application of a single index to a group. The selection of the indices to be used in the revaluation computation is the final analytical step in this method. The actual computations are very simple and can be completed quickly by data processing equipment. The basic calculation is the multiplication of historic costs by the ratio of the current date price index to the purchase date price index. For example, to revalue a machine that was purchased in 1974 for \$10,000, when the price index was 120, a simple calculation using the ratio of the current price index to the original price index would be made. If the current price index was 132, the calculation would be $\$10,000 \times (132/120) = \$11,000$. [Ref. 4: p. 67-69].

Unfortunately, despite the advantages of price indexing, there are several major drawbacks. The selection of an appropriate index is a significant problem. There can be little assurance that an index, which actually represents the average price change of a group of goods, can be matched to a grouping of specific assets within a firm. At issue is congruence, for it is difficult at best to determine the specific items which are included in the index. Another aspect of the index problem is in determining the accuracy with which indices incorporate technological changes. Prices of equipment and the qualitative and productive characteristics

of equipment can and do move at different rates and even in different directions. An example of such change can be found in mini-computers, where prices have dropped dramatically while productive capacities have grown. It is apparent that the replacement costs obtained by price-indexing assets or groups of assets in which rapid obsolescence is a factor will be of questionable relevance.

These two problems, matching indices with assets or asset groupings and technological obsolescence, coupled with the potential deficiencies in the accounting records noted earlier, present ample grounds for the belief that indiscriminate use of price indexing may produce inaccurate or even misleading results. As new and more specific indices are developed, the problem of matching can be lessened ; but the most appropriate applications for price indexing will continue to be in revaluing low cost groupings of assets [Ref. 16: p. 22; Ref. 17: p. 55; Ref. 18: p. 30; Ref. 19: p. 22].

3. Functional Pricing

Functional pricing is the most complex method for internal current cost valuations. Engineering studies must be made to develop the costs of new facilities for existing types of production. These facility costs must next be reduced to the costs of some unit of productive capacity, such as gallons per week or tons per year. The unit costs are then multiplied by the capacities of the firm's present facilities to obtain the new replacement costs [Ref. 17: p. 55]. This method is particularly applicable to processing and refining industries but can also be applied to most other industrial groups. While the costs developed by this method are accurate and relevant, the effort and expense associated with functional prices from a zero base is large. For firms which have recently completed new facilities, an efficient and inexpensive adaptation of functional pricing

can be employed for revaluing homogeneous facilities. The most recent cost per unit of production is applied to the capacities of the older facilities to obtain a current cost as of the date the newest facility was entered into the firm's financial records. This replacement cost is then multiplied by an appropriate price index to adjust to a current cost [Ref. 6: p. 37]. The computational procedure of this method is shown in Figure 3.1

Production Line	Date of Construction	Capacity in Tons per Year
A	1972	25,000
B	1978	40,000
C	1980	40,000
D	1985	50,000
Total		155,000

Cost of the newest facility(D) = \$2,000,000

Unit cost in the newest facility = $\$2,000,000 / 50,000 \text{ tons} = \40

Replacement cost of total capacity in 1985 = $155,000 \text{ tons} \times \$40 = \$6,200,000$

1985 price index = 140

Current(1986) price index = 145

Current replacement cost of total capacity = $\$6,200,000 \times (145/140) = \$6,421,429.$

Figure 3.1 Example of Computation.

There are two dangers in this simplified approach. First, the age of the base facility in this adaptation is critical. Even in a low technology industry, change does occur ; and there will be change in construction methods and techniques. Since indices, as was noted earlier, do not

always accurately reflect improved efficiencies, material differences between calculated and actual current costs can result from using this adaptation when the base facility is more than a few years old. Second, the index must be selected with care. Even if there has been no technological change, the use of an inappropriate index can result in a material misstatement of the current costs for each facility group revalued by this method. [Ref. 9: p. 90-104]

4. Appraisals

The final revaluation method is that of having fixed assets revalued by appraisal. There are many professional appraisal firms available [Ref. 3: p.70]. The advantages of this method include the absence of management bias and a reduction of the internal demands on the firms. The relevance of the costs determined by outside appraisal firms is subject to interaction between the firms and appraisals. Because there are appraisals for different purposes, such as liquidation, insurance and fair market value, and each reports different values, the explicit purpose of the appraisal must be made clear at the beginning of the engagement. The appraiser must also be informed of any plans for the disposition of any equipment or facilities. Lastly, full access to the asset records and the assets themselves must be provided. While the expense of using this method will depend on the extent of the services performed, it may be little more than the cost of employing one of the other methods internally.

F. DEPRECIATION

After computing the current costs of fixed assets, depreciation should next be calculated. Depreciation may be developed easily after the current replacement costs have been obtained for the facilities and equipment. The ROK tax law permits either the straight line or a usage method for depreciation. Division of the replacement cost by the

expected life of the asset in years will provide the straight line depreciation charge. To compute the usage depreciation charge, the replacement cost is first divided by the expected life of the asset in units; then the unit charge is multiplied by the total units for the period to determine the usage depreciation charge. [Ref. 4: pp. 992-994]

IV. ANALYSIS OF CURRENT LAW

In chapter III, the writer examined inflation effects in the ROK economy and discussed accounting methods for coping with inflationary conditions which now exist and are anticipated to continue in the future. Under such economic conditions, analyzing the appropriateness of the ROKA procurement system regulated by laws is very important in order to deal with the effects of inflation. The resultant analysis showed that the current law was not likely to support the ROKA procurement system in dealing with the inflation effects. The resultant problems caused by inflation can be summarized into four categories: First, the law is weak in evaluating financial capability of firms which want to participate in military contracts. Second, it is hard to estimate reasonable profit rates of contracts under the current laws. Third, the estimated costs of projects may be computed by inappropriate cost accounting data. Finally, problems may exist in negotiating contract amounts in cost reimbursement type contracts.

A. PROBLEM OF FINANCIAL CAPABILITY

It is commonly believed that a firm with strong financial capability can guarantee a high quality of project performance in a timely manner with minimum costs. Answering the question, "What is strong financial capability?" depends on the situation. Although ratio analysis of financial statements (i.e., profitability ratios, activity ratios, leverage ratios and liquidity ratios) can commonly be used, the objective of analyzing financial capability affects the method and scope of the analysis. The objective of analysis of the firm's financial capability in ROKA procurement is to evaluate the ability to

accomplish certain kinds of projects while maintaining required standards. Thus financial ratio analysis can be considered an appropriate technique in actual ROKA procurement practice within data and time available to the government contracting officer. Government contracting officers are actually conducting financial ratio analysis consistent with the requirements of the law. In order to accomplish this objective, Provision 88 of the Execution Law of Budgeting and Accounting was set up. According to the law, those who want to participate in military contracts should submit financial statements to a government contracting officer (see Appendix A-2). Problems arise, however, as it is not evident whether the company should submit historical cost financial statements or financial statements adjusted for inflation effects (i.e., HC/CD or CC/CD model). As a result, some of them submit historical cost financial statements and others based on HC/CD model or CC/CD model in real ROKA procurement situations.

The ROKA should specify which kinds of financial statements are to be submitted for the purpose of comparison. The financial analysis based on historical cost financial statements may tend to mislead the judgement concerning a firm's ability to accomplish a certain project. When examining the ability of a firm to complete a project within a given period of time under the inflationary conditions addressed in Chapter III, a government contracting officer should discount projections based on the assumption that the value of the won (unit of ROK currency) will remain constant.

Although the results of financial analysis of a firm cannot show exactly what a firm's financial capability is, ratio analysis permits the charting of a firm's history and the evaluation of its present position. Because a ratio is not a meaningful number in and of itself, it must be

compared with something before it becomes useful. The two basic kinds of comparative analysis are (1) trend analysis, which involves computing the ratios of a particular firm for several years and comparing them over time to see if the firm is improving or deteriorating, and (2) comparisons with other firms in the same industry. The trend of operating income on a CC/CD model may be decreasing while the trend of operating income on historical cost financial statements is gradually increasing. This can happen when selling prices are not increased enough to offset expenses measured at current cost. Many executives resist raising prices because of the uncertainty of customer reaction, even though frequent price increases are obviously essential for the survival of most businesses during prolonged periods of high inflation. Therefore, raising prices cannot include all cost considerations, such as monetary losses and depreciation and cost of goods sold adjusted to inflation. In this trend analysis case, how should an information user judge the firm's profitability? Does the result of profitability based on historical cost provide useful information? The key for answering the question is to decide whether historical cost income or current cost income is more realistic in terms of a physical capacity maintenance concept. This concept considers "income to exist only insofar as inflows exceed the amount needed to maintain physical productive capacity" [Ref. 20: p. 131]. In this view, income exists only after continuation of physical capacity is ensured. Under this concept, operating income as defined in CC/CD model is the more relevant yardstick for evaluating financial capability analysis. This will be discussed in Chapter V.

Another case explains the difficulty in comparing returns on equity. Suppose two companies in the same

industry (one operates with old assets and the other operates with new assets) have equal historical cost returns on equity of 10 percent. With inflation accounting, the equity attributable to the company with old assets may double because of the change in the write-up of its assets to a price change basis. The return on the equity of the company with old assets declines below 10 percent because its historical cost income is reduced by increases in depreciation and cost of goods sold. The historical cost model data and the CC/CD model data for the company with new assets are almost identical because the assets are already expressed in recent dollars as of the purchasing date. In addition, the expenses of the company with new assets are all expenditures of the current accounting period. Therefore, historical cost income of the new assets company is similar to income in the CC/CD model. In this case, is it reasonable to argue that the company with old assets has the same return on equity as the new assets company? The answer is 'yes' if information used is based on HC data. But the answer is absolutely 'no' if it is based on inflation accounting data.

The most important question is what accounting system should be used by a government contracting officer in conducting financial capability analysis under current inflation conditions. There can be much controversy whether or not a CC/CD model provides more meaningful information to a government contracting officer for accomplishing the objective of analyzing a firm's financial capability in ROKA procurement. But conceptually, it is obvious that HC financial statement should be adjusted in order to reflect inflation effects. As a result, the quality of the project and possibility of completing the project within the time period given might be improved by introducing HC/CD or CC/CD model.

B. PROBLEM OF PROFIT RATE

In many respects, the most important function of proper contract design is motivation of the contractor. The source of motivation in contracting is the payment of profit. The contractor's earning a reasonable profit is a concern to the buyer as well as to the contractor, because an unprofitable contractor will alternatively become an unreliable supplier. But it is hard to decide how much profit will be paid to the contractor for the purpose of satisfying both the buyer and the contractor. In general, an average industrial profit rate in recent years is one useful criterion, when the data are available. The firm's own profit rate can be used as a criterion for deciding the proper profit rate on a specific project.

As shown in Appendix B, Provision 12 of Established Accounting Rules 1201.04-105-2 specifies that a reasonable rate of profit can be added to project costs when a government contracting officer prepares the estimated cost of the project; and Provision 8 of the Law of Budgeting & Accounting prescribes that profit rates should not exceed 10 percent of the total estimated cost of the project before profit [Ref. 3: pp. 71-72]. Problems concerning this provision are: What is a reasonable profit rate and how does the 10 percent profit limit affect buyer and contractor satisfaction? There is tendency on the part of the buyer to attempt to keep the company's profits at the present or past level or at an average industrial profit level. If the firm's profit performance or the average industry profit rate can be accepted by both sides as a criterion for a reasonable profit rate, appropriateness of income information from financial statements is very important. Although profit rates may be decided strictly upon the contractor's efforts, contractor risk, facilities investment, and special factors should be considered.

At most, government contracting officers in ROKA can utilize profit rates on financial statements presented by those who want to participate in military contracts in preparing estimated project costs or in negotiating appropriate profit on a project. Income from HC financial statements is different from an inflation accounting system (i.e., HC/CD or CC/CD). Because past costs are much lower than current costs, the traditional historical cost assumption creates the illusion of prosperity, particularly for capital-intensive companies with older assets.

When the general price level (GPL) rises over a period of time, traditional historical cost (HC) financial statements understate certain assets and expenses relative to GPL-adjusted statements, because those items were recorded in old dollars that had higher purchasing power than current dollars. Therefore, if the old amounts are not restated into current period constant dollars, there are persistent and undisclosed understatements of total assets and a related overstatement of HC income relative to GPL-adjusted equivalents. This overstatement of HC income may mislead the decisions related to the appropriate profit rate on both the estimated cost of the project and a noncompetitive negotiation process. Another concern about the profit rate is whether the operating income or the net income before tax is appropriate. The HC income or the HC/CD income automatically includes realized holding gains on nonmonetary assets and does not differentiate between these holding gains and the operating income, as shown in Chapter V. If holding gains are distributed in dividends, remaining resources are insufficient to start the business cycle again. If it is believed that these holding gains constitute real income, the result is to reduce the productive capacity of the business. From a social standpoint, any payout of holding gains is tantamount to eating our seed corn [Ref. 20]. For those

reasons, operating income from inflation accounting is considered reasonable in estimating profit rate of the project.

C. PROBLEM OF THE ESTIMATED COST OF THE PROJECT

One feature in the ROKA procurement system is to prepare the estimated cost of the project before the solicitation process. As shown in appendix A, provision 93 of the Execution Law of Budgeting and Accounting requires a government contracting officer to prepare the estimated cost of a project, regardless of the method of the contract (either competitive or noncompetitive contract method). [Ref. 3: p. 50]. The estimated cost of a project has three important functions. First, it provides a criterion to decide award and selection of a contractor in the competitive contract method. The award must be given to a firm which offers the lowest price below the estimated cost of the project. Second, it provides a rational benchmark for price negotiation between buyers and sellers in noncompetitive negotiation contracts. The government contracting officer should reach an agreement on a contract amount which is below the estimated cost of the project. Finally, it provides a protective mechanism to accomplish the project within budget. [Ref. 3: p. 54]

In view of these functions, the appropriateness of the estimated cost of the project affects the effectiveness of ROKA procurement. If it is overestimated, it may result in overexpenditure of the government budget on the project. If it is understated, it may result in delay of the project or lower quality of the project. Therefore it is very important to establish appropriate standards for the estimated cost of the project.

As shown in Appendix A-2, it is the principle of the government contracting officer to use current market price when this can be determined. When market price or prices

issued by the government cannot be determined, prices of products which have a similar function or appraisals, determined by special institutions, can be used. In cases where these prices are not available or are not reasonable because of the special nature of the project (such as projects needing Research, Development & Engineering (RD&E), special design & engineering, large scale project and mass purchasing at a time), the government contracting officer should follow the procedures of the cost accounting method. [Ref. 3: p. 50]. In this cost accounting method, the government engages an organization which meets specified criteria for professional expertise to prepare an estimate of a project's cost. The types of organizations qualified to prepare such cost estimates and the costs that they are to consider in the process are detailed in Appendix B.

As shown in Appendix A-3 and Appendix B, all cases are required to specify material costs, labor costs, overhead costs, general and administrative costs (G&A) and profit for a certain project, whether the estimated cost of the project is calculated by the cost accounting method (Appendix B) or by the method shown in Appendix A-3. The concern is whether the provision was designed to ensure the best estimation of the project cost or not.

Two important factors seem to be related to the quality of the estimation: (1) whether the estimation includes all of the cost items spent for the project (that is, all resources used) and (2) how accurately the prices of these items were estimated. Although including all cost items of the project is an important factor in making a good estimation, the writer will put aside this issue for the purpose of the thesis. In responding to the question of how accurately the prices of items were estimated, it is essential to decide which accounting data are more relevant to the estimation of the project costs -- HC or CC/CD data? The

answer is certainly CC/CD data, in terms of the physical capacity maintenance concept, because costs based on the HC model are not enough to recover resources used for the project.

Special attention should be placed on noncompetitive negotiation contracts. In sealed bidding, the normal workings of competitive markets will tend to produce a contract price that reflects current costs of resources. These market forces are not present in a noncompetitive negotiation, however. Table III illustrates the proportions of contracts classified by methods and types. If one considers that 45 percent of all ROKA procurements are currently awarded on a noncompetitive basis, the impact of not using current cost in preparing the estimated cost of the project may be substantial. The estimated cost of the project should be based on current cost in order to ensure that the negotiated contract price will be reasonable for both the contractor and the government.

TABLE III
PROCUREMENT STATISTICS

Procurement methods	%(won)	Procurement types	%(won)
Sealed bidding	25	Firm-fixed price	78
Competitive negotiation	15	Cost reimbursement	22
Noncompetitive	45		
Small purchasing	15		
Totals	100		100

Table derived from the annual report of contracts performance during fiscal year 1983 in ROKA.
(Data obtained from the head of Management Department of ROKA by international phone call.)

D. PROBLEM OF COST REIMBURSEMENT CONTRACT

Similar problems exist on the cost reimbursement contract type. This type of contract is established on the basis that the customer will reimburse the supplier for costs incurred by the supplier in performing the obligations of the contract. It is suitable for use only when the uncertainties involved in contract performance are of such magnitude that the cost of performance cannot be estimated with sufficient reasonableness to permit use of any type of fixed-price contract. [Ref. 21: p. 84]

The Provision 70-17 of the Law of Accounting & Budgeting permits the use of cost reimbursement type contracts only if the agency head determines that such method of contracting is likely to be less costly than other methods or that it is impossible to make the estimated cost of the project before finishing the project [Ref. 3: p. 21]. After finishing the project, the supplier should submit record books and accounts to the agency to substantiate the amounts claimed for reimbursement. The amounts claimed by the supplier should be calculated based on the Provision 95 of the Execution Law of Budgeting and Accounting mentioned in the preceding section. [Ref. 3: p. 59]

In calculating the amounts claimed for reimbursement, it is required to justify prices designed to recover current costs. But similar problems exist as were noted when calculating the estimated cost of the project. One characteristic of this type of contract is the determination of contract price after completion of the project. Conceptually, both sides are satisfied when project prices are based on the actual cost of resources used plus a reasonable profit rate. In defining resources used, two factors can be considered: (1) Which costs are to be included for the project and (2) how should those costs be calculated? In order to decide costs to be included, a

government contracting officer should be able to get information which is systematically accumulated in the accounting records from companies or industries. Controversies on the first question about costs to be included may be brought up on both sides. Simply prescribing allowable cost items for the project is not sufficient in determining resources used for the project. Answering the question of how actual costs of the project should be calculated is the main concern of the writer. Because historical costs of the resources used for the project are too low to recover the resources used for the project under inflationary conditions, inflation adjusted accounting data are needed in order to improve satisfaction of both side. By doing that, ROKA is able to expect high quality of the project performance, reduced disputes, and completion in a timely manner. The impact on this issue will be considerable as one considers that 22 % of total contracts during 1983 in ROKA were conducted by this type of contract, as shown in Table III.

This chapter examined the ROKA procurement system's effectiveness through examining laws and rules related to cost accounting practice under the assumption that inflation will last for years and the effects will be substantial. Inflation has created four serious problems in the ROKA procurement system. First, financial statements currently being submitted by suppliers no longer provide reliable information in evaluating the financial capability of the firm. Second, the profit rate from HC financial statements is not sufficient to use as a criterion for estimation of a profit rate for a specific project. Third, the estimated cost of the project under current law no longer ensures the best estimation of the actual costs of a project. Finally, costs to reimburse suppliers in cost reimbursement type contracts no longer ensure reasonable amounts representing the opportunity cost of the project.

The solution then is to adjust the accounting system for firms wishing to participate in government contracts to reflect the impact of inflation. Second, the ROKA procurement system should be revised to include inflation accounting systems for the purpose of finding solutions to these types of problems.

V. CASE STUDY

A. BACKGROUND OF THE STUDY

The preceding chapters have examined two widely proposed methods of accounting for inflation and the nature of inflation problems related to procurement laws in ROK. The purpose of this study is to identify and compare specific procedures for implementing those two methods and explain how the implementation would improve the ROKA procurement. Because the purpose of this thesis is to examine inflation accounting with primary emphasis on its application in ROKA, the financial statements have been somewhat condensed. To illustrate application of the HC/CD and CC/CD models, data for Korea Company are given in Table IV through XIV. These data are adapted from the book, Intermediate Accounting by Welsch, Newman, and Zlatkovich. The illustration of implementation procedures for both HC/CD statements and CC/CD statements are also adapted from the same book [Ref. 8: pp. 1443-1475].

B. IMPLEMENTATION PROCEDURES FOR HC/CD STATEMENTS

The implementation procedures involve the following four steps:

- 1) Identify each financial statement item as monetary or nonmonetary.
- 2) Prepare the HC/CD balance sheet.
- 3) Prepare HC/CD income statement.
- 4) Compute the purchasing power gain (loss) on net monetary items during the year. [Ref. 8: pp. 1449-1456]

1. HC/CD Balance Sheet

For step 1, balance sheet items should be noted as either monetary or nonmonetary, but all income statement revenues,

expenses, gains, and losses are nonmonetary. For step 2, The HC/CD balance sheet items should be restated at their current dollar equivalents. As shown in Table VI, HC/CD amounts on nonmonetary items can be calculated by multiplying the HC amount by the CD restatement ratio. The numerator of all CD restatement ratios for Korea Company is 159, the GPL index as of the balance sheet date. The denominators vary, depending upon when the individual item was acquired. For instance, the inventory HC/CD amount in Table VI shows \$25,318 ($\$25,000 \times 159/157$), where 157 is the average GPL index of 4th quarter 1985 and 159 is the GPL index as of the balance sheet date. Because monetary items are not affected by GPL changes, their HC and HC/CD amounts are the same. Therefore, they are not restated on the HC/CD balance sheet. The amount of \$79,272 of HC/CD retained earnings can be computed as a balancing amount ($\$259,468 - (\$45,000 + \$10,000 + \$125,196)$).

2. HC/CD Income Statement

In step 3, the objective of the HC/CD income statement for the Korea Company is to report the HC revenues, expenses, gains and losses at their CD equivalents on Dec. 31, 1985. The numerator of all restatement ratios is the GPL index at year-end. The denominators of the restatement ratios vary according to the transaction date. Thus, for Korea Company, all numerators are 159, and the denominators vary as shown in Table VII.

As shown in Table VII, sales revenue is restated by the CD index ratio 159/152. Because sales were made evenly spread throughout the year, the average GPL index of the year, 152, was used. The cost of goods sold requires multiple HC/CD restatements as shown in note (1) of Table VII. General expenses occurred evenly during 1985. Therefore, the HC amount is restated by the average CD ratio for the year, 159/152. The HC/CD amount of depreciation

TABLE IV
GPL INDEX

Date	GPL Index	CD Restatement Ratio(1)
1/1/1982	127	159/127
3/31/1983	138	159/138
12/31/1984	147	159/147
3/31/1985	149	159/149
6/30/1985	151	159/151
9/30/1985	154	159/154
12/31/1985	159	159/159

	PERIOD	
Average,	4th quarter 1984	146
Average,	4th quarter 1985	157
Average,	full year 1985	152(2)

(1) GPL index at the end of current period

GPL index on transaction date

(2) $(147+149+151+154+159)/5=152$

*Data from Ref. 8; p. 1449.

expense is based upon the HC/CD amount of the related asset. Therefore, depreciation expense on equipment is restated by the same ratio applied to equipment, 159/127, because the assets were acquired and decreased net monetary assets on Jan. 1, 1982, when the GPL index was 127. Income tax expense decreased net monetary assets (i.e., increased income tax payable) evenly during 1985. Therefore, it is restated by using the average CD restatement ratio, 159/152. Finally, the purchasing power loss on net monetary items of \$4,477 is computed in Table IX and is discussed in the next subsection.

TABLE V
SUMMARY OF TRANSACTIONS DURING 1985

1. Sales on credit of \$144,000 were made during the year.
2. Credit Purchases of \$85,000 were made monthly during the year.
3. The equipment is depreciated 4% per year with no residual value; the equipment was purchased on 1/1/1982, when GPL was 127.
4. General expenses of \$20,000 were accrued and paid monthly during the year.
5. Total sales on credit of \$135,000 were collected during the year.
6. Payments on credit purchase were \$80,000 during the year.
7. Dividend declared was \$10,000 at midyear when GPL index was 151. It was paid one month later.
8. The initial common stock was issued on 1/1/1985, when the GPL index was 127. The amount was \$100,000.
9. Income tax accrued during the year was \$10,000. It will be paid in 1986.
10. Inventory was \$25,000 as of 31/12/1985 based on FIFO. [Ref. 8: p. 1450]

3. Purchasing Power Gain (Loss)

The final step of the HC/CD model is to compute purchasing power gain (loss) on net monetary items. The beginning net monetary asset amount plus changes in net monetary assets during the year equals the ending net monetary asset amount. When all of these amounts are restated into their CD equivalents at Dec. 31, 1985, the difference between the total (1) HC and (2) HC/CD ending net monetary assets is an economic measure of the company's success (a gain) or lack of success (a loss) in using monetary items during the year. This difference is viewed as a measure of the HC/CD purchasing power gain (or loss) on net monetary items during the period. [Ref. 8: pp. 1455-1456]

In Table VIII, Korea Company began 1985 with \$45,000 of net monetary assets when the GPL index was 147. Therefore, the total beginning balance of \$45,000 must be restated by using the CD restatement ratio, 159/147. The

TABLE VI
BALANCE SHEET

Korea Company

	HC \$12/31/84	HC 12/31/85	CD Ratio	HC/CD 12/31/85
Assets				
Cash	\$61,000	\$86,000	monetary	\$86,000
Account Rec.	24,000	33,000	monetary	33,000
Inventory	20,000	25,000	159/157	25,318
Equipment	100,000	100,000	159/127	125,197
Acc. Dep.	(20,000)	(24,000)	159/127	(30,047)
Total	\$185,000	\$240,000		\$259,468
Liabilities				
Account payable	\$40,000	\$45,000	monetary	\$45,000
Income tax Pay.		10,000	monetary	10,000
Stockholder's equity				
Common stock	100,000	100,000	159/127	125,196
Retained earnings	45,000	65,000	balance	79,272
Total	\$185,000	\$240,000		\$259,468

increases and decreases in all of the monetary items must be restated individually to CDs of Dec. 31, 1985, by using the index at that date (i.e., 159) as the numerator. The denominator must be the index at the transaction date of each item. Sales of goods and services, operational assets, and common stock, whether for cash or on account, cause net monetary assets to increase. In contrast, purchases, expenses, declaration of dividends, and acquisitions of nonmonetary assets, whether for cash or on account, cause net monetary assets to decrease. Table IX shows the CD restatement of such items. Observe in Table VIII that the purchasing power gain (loss) is computed to be the remainder of the ending HC amount minus the ending HC/CD amount. A

TABLE VII
INCOME STATEMENTS

Korea Company during 1985

	HC	CD ratio	HC/CD
Sales revenue	\$144,000	159/152	\$150,624
Cost of goods sold	80,000	(1)	85,365
General expenses	20,000	159/152	20,920
Depreciation expense	4,000	159/127	5,008
Income tax expense	10,000	159/152	10,460
Total expenses	114,000		121,753
Net income	\$30,000		
HC/CD income before purchasing power loss			28,871
Purchasing power loss (Table VIII)			(4,477)
HC/CD income			\$24,394
(1) Cost of goods sold:			
Inventory, 1/1/'85	\$20,000	159/146	\$21,780
Purchases	85,000	159/152	88,910
Goods available	105,000		110,690
Inventory, 12/31/'85	(25,000)	159/157	(25,325)
Cost of goods sold	\$80,000		\$85,365

positive remainder is a purchasing power gain, and a negative remainder is a purchasing power loss. The logic of this relationship can be explained using Table IX. If Korea Company had kept pace exactly with general inflation during 1985, the net monetary assets should have been \$68,477 at the end of 1985. However, on Dec. 31, 1985, Korea Company actually had net monetary assets of only \$64,000. The difference of \$4,477 is a purchasing power loss. This amount is reported on the HC/CD income statement (Table VII). [Ref. 8: p. 1455-1456]

TABLE VIII
PURCHASING POWER GAIN (LOSS)

NET MONETARY ITEMS	Hc	CD ratio	HC/CD
1. Total beginning net monetary assets	\$45,000(1)	159/147	\$48,673
2. Increase in net monetary assets during 1985 from sales revenue	144,000	159/152	150,624
3. Decrease in net monetary assets during 1985 from:			
Purchases	(85,000)	159/152	(88,910)
General expenses	(20,000)	159/152	(20,920)
Income tax expense	(10,000)	159/152	(10,460)
Cash dividends declared	(10,000)	159/151	(10,530)
4. Total ending net monetary assets	\$64,000		\$68,477
5. Purchasing power loss	=====		(4,477) =====

(1) computation from 1984 balance sheet (Table VI);
cash, 61,000 + Account receivable, 24,000 -
accounts payable, 40,000 = 45,000.

C. IMPLEMENTATION PROCEDURES FOR CC/CD STATEMENTS

In the preceding section, the writer showed the procedures which change HC statements to HC/CD statements for the Korea Company. The changed financial statements reported a purchasing power loss on net monetary assets in Table VII, which loss was not reported under HC accounting. But, HC/CD reporting does not show current values. The GPL indexes in Table IV ignore the specific price changes of the individual assets and liabilities of the entity. Now, the writer will present the procedures of CC/CD statements using the same Korea Company data and, in addition, current cost data. In order to get these additional data, the preparer of the CC/CD statements may follow the methods shown in Chapter III. Selected current cost data are given in Table IX.

The five application steps to prepare CC/CD financial statements are presented below:

TABLE IX
SELECTED CURRENT COST DATA

Korea Company
=====

Item	Source of CC	CC/CD
31/12/84		
Assets (beginning balance)		
Inventory	From prior period	\$20,500
Equipment	From prior period	175,000
Acc. depreciation	From prior period	(35,000)
31/12/85		
Assets (ending balance)		
Inventory	Suppliers' price	26,000
Equipment	Indexed, specific	196,000
Acc. depreciation	196,000 X 24% (1)	(47,040)
During 1985 (Revenue and expenses)		
Sales revenue	HC, Table VII	144,000
Cost of goods sold	Suppliers' price	86,000
Depreciation expenses	Computed (2)	7,420
General expenses	HC, Table VII	20,000
Income tax expense	HC, Table VII	10,000

Computations

- (1) $\$24,000/100,000$ (i.e., HC depreciation/HC) =
24% depreciated to date; $196,000 \times 24\% = 47,040$.
- (2) Current cost depreciation expense for the year
based on average current cost of equipment:
 $(175,000 + 196,000) / 2 = 185,500$; $185,500 \times 4\%$
(depreciation rate per year) = 7,420.

* Data are adapted from Ref. 8; p. 1463.

- 1) Identify each item as either monetary or nonmonetary.
- 2) Compute the purchasing power gain on net monetary items.
- 3) Prepare the CC/CD balance sheet.
- 4) Prepare the CC/CD income statement.
- 5) Compute the holding gain. [Ref. 8: p. 1462]

Step 1 and 2 are the same as discussed in Table VI and Table VIII in the HC/CD model. A purchasing power loss of \$4,477 is to be reported on the CC/CD income statements, as shown in Table XI.

TABLE X
CC/CD BALANCE SHEET

	Source	CC/CD
<hr/>		
Assets		
Cash(M)	Tab. VI	\$86,000
Account payable(M)	Tab. VI	33,000
Inventory	Tab. VI	26,000
Equipment	Tab. VIII	196,000
Accumulated depreciation	Tab. VIII	(47,040)
		<hr/>
Total		\$293,960
		<hr/>
Liabilities		
Account payable(M)	Tab. VI	45,000
Income tax payable(M)	Tab. VI	10,000
Stockholders' equity		
Common stock	Tab. VI	125,196
Retained earnings	Balance	113,764
		<hr/>
		\$293,960
		<hr/>

* M means monetary item

1. CC/CD Balance Sheet

Step 3 is to prepare the CC/CD balance sheet. The CC/CD balance sheet of Korea Company at Dec. 31, 1985, is presented in Table X. The reported monetary amounts are the same as in the HC and HC/CD balance sheets. Therefore these amounts are taken directly from Table VI. The 1985 ending CC/CD amounts for nonmonetary assets (e.g., inventory) are given in Table VI. The CC/CD amount for common stock is the HC amount restated in end-of-period dollars (as in HC/CD reported in Table VI). The amount of retained earnings is computed as a balancing amount.

2. CC/CD Income Statements

The next step is to prepare the CC/CD income statements. The CC income statement of Korea Company for 1985, stated in CDs

of Dec. 31, 1985, is given in Table XI. Sales revenue, general expenses, and income tax expense are as computed in Table VII. These amounts occurred evenly throughout 1985 and did not involve nonmonetary assets. Cost of goods sold and depreciation expense involve nonmonetary assets (inventory and equipment). Their CC amounts are based on the average CCs of those assets during 1985, as shown in Table IX. Cost of goods sold was \$86,000 and depreciation was \$7,420 (Table IX). All of the revenue and CC expense measures are multiplied by the CD restatement ratio, 159/152, to restate each item from average dollars of 1985 (because they occurred evenly during 1985) to CDs of Dec. 31, 1985. This attains comparability with all other amounts in the CC/CD 1985 financial statements.

TABLE XI
CC/CD INCOME STATEMENT

	Source	CC Nominal Dollar	CD Ratio	CC/CD Amounts
Sales revenue	Tab. VII	\$144,000	159/152	\$150,624
Expenses				
Cost of goods sold	Tab. IX	86,000	159/152	(89,956)
General expenses	Tab. VI	20,000	159/152	(20,920)
Depreciation	Tab. IX	7,420	159/152	(7,761)
Income tax expense	Tab. VI	10,000	159/152	(10,460)
CC/CD income from				
Operations				\$21,527
Purchasing power loss on net monetary items				(4,477)
Total change in CC of nonmonetary items			22,880	
Change due to general inflation			12,774	
Holding gain			-----	10,106
CC/CD income				\$27,156

Income from continuing operations for Korea Company (i.e., \$ 21,527) is computed as the difference between CC revenues and CC expenses. The last phase of the preparation of the CC/CD income statement is to include (1) the purchasing power gain (loss) on net monetary items and (2) the two price change effects on nonmonetary items -- change in CC of nonmonetary items due to general inflation and change in CC of nonmonetary items due to relative price changes, that is, the real holding gain. These three amount are set in a box for emphasis in Table XI. [Ref. 8: p. 1467]

3. Holding Gain

The last step of implementation procedures for CC/CD statements is to compute price change effects on nonmonetary items. It involves computation of the two price change effects related to nonmonetary assets. One is the change in CC of nonmonetary items during the period due to general inflation only, the other is a holding gain. The holding gain occurs only when the specific price change of the item is more or less than the change in CC due to general inflation. Table XII shows how to compute these two price change effects. The computational format shown in Table XII is the same for each nonmonetary asset. The reasoning underlying the computations is similar to that applied to compute the purchasing power gain or loss on net monetary assets. That is, the changes during the period in the CC amount of each nonmonetary asset are analyzed using the beginning balance and the additions and deductions during the period to derive the ending balance.

D. EVALUATING THE RESULTS

So far, the writer has examined the methods for adjusting HC financial statements to inflation effects which can be applied to the Korea Company. For convenience in comparing the three methods of preparing financial statements (HC,

TABLE XII
HOLDING GAIN

Nonmonetary items	CC(transa- ction date)	Restated to CDs	CC(12/31/ 1985)
Inventory			
Beginning	\$20,500	159/147=22,881	
Purchases	85,000	159/152=88,910	
Cost of goods sold	(86,000)	159/152=89,556	
	<hr/>	<hr/>	<hr/>
Ending	\$19,500	\$21,135	\$26,000
Holding gain			4,865
Equipment			
Beginning	140,000	159/147=151,480	
Depreciation	(7,420)	159/152= (7,761)	
	<hr/>	<hr/>	<hr/>
Ending	\$132,580	\$143,719	\$148,960
Holding gain			5,241
	<hr/>	<hr/>	<hr/>
Total	\$152,080	\$164,854	\$174,960
	<hr/>	<hr/>	<hr/>
Total change		\$22,880	
Change due to GPL		\$12,774	
Holding gains			\$10,106

HC/CD, CC/CD), Table XIII summarizes the results of each financial statements of Korea Company.

As shown in Table XIII, total assets increased when HC amounts are restated to CDs and to CC/CDs. The HC/CD income statement reports the purchasing power loss on net monetary items of \$4,477, which is not reported under HC accounting. The CC/CD income statement reports both the purchasing power loss and holding gains. The CC/CD operating income, excluding both the purchasing power loss and the holding

TABLE XIII
SUMMARY OF THE RESULTS

BALANCE SHEET
31/12/1985

	HC	HC/CD	CC/CD
Total assets	\$220,000	\$239,468	\$293,960
Liabilities	55,000	55,000	55,000
Stockholders' Equity	165,000	184,468	238,960
Total	\$220,000	\$239,468	\$293,960

INCOME STATEMENT
31/12/1985

	HC	HC/CD	CC/CD
Sales Revenue	\$144,000	\$150,624	\$150,624
Cost of goods sold	80,000	85,365	89,956
General expense	20,000	20,920	20,920
Depreciation expense	4,000	5,008	7,761
Income tax	10,000	10,460	10,460
Total Expense	\$114,000	\$121,753	\$129,097
Operating income	30,000	28,871	21,527
Purchasing power loss		(4,477)	(4,477)
Holding gain			10,106
Net income	\$30,000	\$24,394	\$27,156
Financial ratios:			
Debt/Equity	33%	30%	23%
Operating income/Equity	18%	15.7%	9%

gain, of \$21,527 may be useful for assessing future net cash flows. Since income is "what remains after the company has set aside enough resources to preserve its starting capital

TABLE XIV
NET ASSETS

BALANCE SHEET
=====

31/12/1984

	HC	CC/CD (1)	CC/CD (2)
<hr/>			
ASSETS			
Cash	\$61,000	\$61,000	\$65,980
Account Receivable	24,000	24,000	25,959
Inventory	20,000	20,500	22,173
Equipment	100,000	175,000	189,344
Accumulate Depreciation	(20,000)	(35,000)	(37,857)
	<hr/>	<hr/>	<hr/>
Total	\$185,000	\$245,500	\$265,599
	<hr/>	<hr/>	<hr/>
LIABILITIES			
Account Payable	40,000	40,000	43,265
STOCKHOLDERS' EQUITY			
Common Stock	100,000	115,693	125,196
Retained Earnings	45,000	89,807	97,138
	<hr/>	<hr/>	<hr/>
Total	\$185,000	\$245,500	\$265,599
	<hr/>	<hr/>	<hr/>
NET ASSETS	\$145,000	\$205,500	\$222,334
	=====	=====	=====

(1) is the derived from Table IX and

is the CC/CD at 31/12/1984

(2) is derived by column (1) X 159/147 and

is the CC/CD at 31/12/1985

position" [Ref. 20: p. 129], the CC/CD income from continuing operations of \$21,527 is the maximum amount that the company can pay in dividends without reducing its starting capital position. If this amount is consumed (paid as a dividend), the remaining net assets as of 31 Dec. 1985 are \$227,433 (\$293,960 - \$55,000 - \$11,527), where \$11,527 is dividends (dividends of \$10,000 were already paid in midyear). The retained \$227,433 is enough to maintain the net assets of \$222,334 at the end of 1984 shown in Table XIV. In contrast, if HC income of \$30,000 or HC/CD income

of \$28,871 is consumed, the remaining net assets as of 31 Dec. 1985 is \$218,960 and \$220,089, respectively, both less than the company's starting net assets of \$222,334. Therefore, the CC/CD model is a better measure of income, defined in terms of physical capacity maintenance. Table XIII also shows the debt/equity ratio and operating income/equity ratio. However, the ratio varies according to the type of financial statements. Since the CC/CD operating income and the CC/CD balance sheet provide more up-to date information than HC or HC/CD models do, a ratio based on the CC/CD model is also more relevant to evaluate financial capacity of the Korea Company for ROKA procurement, as discussed in Chapter IV. Problems of ROKA procurement related to the cost accounting practice discussed in Chapter IV are related to the question of which financial statements model is more useful for solving those problems. The writer showed that the CC/CD model is the best alternative in evaluating the financial capability of the firm and estimating the proper profit rate for a project under consideration.

Now, let's examine what accounting data are most relevant in determining the estimated cost of a project. Let's assume the government contracting officer gets financial statements from the Korea Company as shown in Table XIII and that the company's only contract during 1985 was one made with another government agency. It is also assumed that the project under consideration in 1986 is the same as that accomplished by the Korea Company in 1985. The estimated cost of the project under consideration amounts to a total expenditure of \$129,097 minus income tax of \$10,460 plus the proper profit rate and, finally, plus the inflation adjustment predicted in 1986 based on the CC/CD income statement of Korea Company. If a company makes a contract with this amount, the company will be able to recover resources used

for the project while maintaining a normal profit rate at the end of 1986. The company will also be able to start its operations in 1987 with the same physical capacity as in 1986. If the government contracting officer uses the HC total expenditure of \$114,000 or the HC/CD total expenditure of \$121,753 as a basis for resources used for the project, the estimated cost of the project will not be sufficient to maintain the same level of physical capacity as in 1985. Consequently, it would be hard to get an appropriate contractor to guarantee completion of a project with the required quality in the given time period. Therefore, information based on the CC/CD income statement is the most reasonable for estimation of project costs

Finally, to see the reasonableness of the CC/CD model in a cost reimbursement contract, let us assume that the government contracting officer made a contract with the Korea Company at the end of 1984 and the company worked on this contract during all of 1985. How much should be paid to the Korea Company at Dec. 31, 1985? In order to maintain the starting capital position, the amount of total expenditure of \$129,097 minus income tax of \$10,460 on the CC/CD income statement and, finally, plus a reasonable profit rate should be able to satisfy both the agency and Korea Company in terms of recovering resources used and accomplishing the project with desired quality and within the intended time period.

In summarizing this case study, the writer showed implementation procedures of both HC/CD financial statements and CC/CD financial statements based on the hypothetical data of the Korea Company. Although HC financial statements can be considered as the basis for preparing accounts, because of its underlying simplicity and the certainty and objectivity derived from original bookkeeping records, it contains the inherent inadequacy that changes in price levels over a

period of years would result in accounts not reflecting current conditions. This inadequacy has been accepted or partly dealt with by some companies which have revalued some or all of their fixed assets.

As shown in this case, the historical cost model loses its usefulness because of several facts. Balance sheets do not show the real value of all the assets. Depreciation is inadequate to provide funds to replace the assets consumed during the year. The effects of holding monetary assets or owing monetary liabilities are ignored. As a result of these inadequacies, the uncritical use of HC financial statements may lead to the situation where capital, although maintained in monetary terms, may not be maintained in real terms and may be distributed to shareholders, employees and customers. To remedy these defects, the HC/CD model and CC/CD model were examined. The HC/CD model retains the traditional HC results but restates those results in terms of CDs. Therefore, it allows users of financial statements to compare HC amounts in a common measuring unit. The HC/CD model also reports the purchasing power gain (or loss) on net monetary items but does not report current values. The GPL indexes used for HC/CD restatements ignore the specific changes of the individual assets and liabilities of the entity (i.e., holding gain or loss). The CC/CD model attempts to deal with the criticisms of historical cost accounting in the following ways: Fixed assets are to be shown in the balance sheet at their value to the business and not at their depreciated original cost. Inventories are to be shown in the balance sheet at their value to the business and not at the lower of their original cost or current market value. Depreciation for the year is to be calculated on the value to the business of the fixed assets concerned. The cost of inventory consumed during the year is to be calculated on the value to the business of the inventory at

the date of consumption and not at the date of purchase. The effects of the purchasing power gain (or loss) on monetary items and holding gain (or loss) on nonmonetary items are differentiated from operating income.

VI. CONCLUSIONS

A. ADVANTAGES OF THE CC/CD MODEL IN ROKA

Although the accounting system in ROK is based on historical cost, there have been some efforts to adjust for inflation and there is growing recognition that the system suffers from some deficiencies. In the ROKA procurement system, it has been determined that the system needs improvement in order to deal with inflation effectively. The two principal alternatives proposed to historical costs were the subject of Chapter III. CC/CD financial statements are favored over both HC and HC/CD statements for use in ROKA procurement, as shown in Chapter III and Chapter V. The CC/CD model is believed to provide data that are of greater relevance under current economic conditions. There are four advantages derived from implementing the CC/CD model in the ROKA procurement system.

First, it improves the analysis of the financial capability of firms that want to participate in public contracts. By entering into contracts with firms with strong financial capability, as determined by more accurate analysis, it is anticipated that projects will be completed with high quality, in a more timely manner, and at a lower cost.

Second, it provides a sounder basis for setting a profit rate for an individual project. A guaranteed fair profit rate should result in increased numbers of companies bidding on ROKA contracts. This will have the salutary effects of bringing more companies into the ROKA contract process, increasing the number of bids on ROKA contracts, reducing contract costs through competition, and fostering additional defense related companies and defense related technology.

Third, it ensures a better estimation of the cost of the project in a fixed price contract. This would support government budget control efforts and ensure contracts are made with the appropriate contractor.

Finally, it enables ROKA to reach an agreement with a contractor on the amount to be reimbursed upon completion of a cost reimbursement contract. Reimbursing the contractor for current costs reduces the probability of a dispute between the government and the contractor.

B. COMMENTS

Implementing the CC/CD model in the ROKA procurement system will raise new problems. The major concern is the reaction to abandoning the familiar HC financial statements, with their simplicity and objectivity. In addition, with very few exceptions, the CC/CD operating income will be lower, as shown in the case study in Chapter V. As a result, some chief executive officers may resist applying it because they want to make a good impression on the public, regardless of the accounting measurement system used.

The second concern is the difficulty and the cost of developing current cost. Chapter III identified the various methods of developing current costs and pointed out the advantages and disadvantages of each. There is no single best method applicable to all firms for developing current costs. Factors concerning the industry, the condition of the asset records, and the availability of time, personnel, and money must all be considered in the selection of a method or a combination of methods. In addition to the facts above, there are several other considerations in applying the CC/CD model cost to the ROKA procurement system. Determining how frequently financial data should be adjusted for general price level change is one problem. These periodically adjusted figures can then be used to develop the total adjusted cost of sales for the fiscal year. Second, in

adapting a price indexing method, the most appropriate and reasonable index must be determined. Finally, the most important thing to facilitate implementation is to test whether it works well in the ROKA system or not. Therefore, further research and surveys in the field will be needed in order to decide the method of revaluation, inventory adjustment requirements, the treatment of limited-use and fully depreciated assets, and similar matters. Trade associations and industry groups must be encouraged to examine problems peculiar to themselves and to develop specific price indices and reporting methods.

C. SUMMARY

This thesis has analyzed the implementation of CC/CD financial statements in the ROKA procurement system. The existing ROKA procurement system was examined and some problems were noted. It was shown that the task of developing the current costs was not excessively difficult or complicated. The selection of the most appropriate methods of developing current cost for a given firm will help to insure that the reported data are reasonable, reliable, and free from bias; and that the data will be useful to both government agencies and to investors. It was also shown how the CC/CD model improves the ROKA procurement system by improving the financial capability analysis, the estimation of the profit rate, the estimation of project cost, the computation of contract price in cost reimbursement contracts.

APPENDIX A

COST ACCOUNTING PRACTICE IN THE MANUAL

The writer selected laws and rules relevant to cost accounting practice in ROKA procurement in this appendix

1. THE LAW OF BUDGETING & ACCOUNTING

1. Provision 70-4 (The method of contracts)

The government contract officer should take the competitively awarded contracts method. But he can take a negotiated contract method when he needs it in terms of the purpose and nature of contracts. In this case, he has to verify the reason by written papers [Ref. 3: p. 18].

2. THE EXECUTION LAW OF BUDGETING AND ACCOUNTING.

1. Provision 88

Those who want to participate in public contracts are required to submit the following in forms of documents proven by public certificated agency: [Ref. 3: pp.47-48].

- (1) Documents to prove that he has facilities which are adequate to complete the project
- (2) License to permit him to engage in the business
- (3) Documents to pass the national security test
- (4) Financial statements
- (5) Others to be required by Treasury Department Order.

2. Provision 93 (Preparation of the estimated cost of the project)

Every government contract officer should prepare the estimated cost of the project, which can be used as a criterion to decide contractor and contract amount. [Ref. 3: pp. 47-48]

3. Provision 95 (Methods)

- (1) Market price and prices issued by government should be used.

- (2) The price calculated by cost accounting method can be used when the market price cannot be available or when applying market price is not reasonable because of special nature of the project such as projects that needs RD&E, special design and engineering and large scale project or mass purchase at a time. In this case, material, labor, overhead, G&A cost and reasonable profit should be distinguished.
- (3) Similar marketing price and appraisal which is determined by special institutions can be used when those mentioned above is not appropriate.
- (4) The cost accounting method normally employed by institutions outside the government contracting agency is shown in Appendix B. Detailed cost accounting method is described in Established Accounting Rules 1204.04-105-2 (Appendix B). [Ref. 3 pp. 50-51]

4. Provision 116

In case of a negotiated contract, the estimated cost of the project should be prepared by provision 95 above. [Ref. 3: p. 59]

3. CONTRACT ADMINISTRATION RULES.

1. Provision 5 (The estimated cost of the project)

- (1) The government officer should specify the following categories as elements of the estimated cost of the project on the "estimated cost paper".
 - A. Material costs: The quality and quantity of the materials and price per unit which are needed for the project.
 - B. Labor costs: Labor volume and labor rate

- details which are needed for the project
- C. Overhead costs which are detailed by items.
- D. G&A costs: The amount calculated by the following formula.

G&A costs = the sum of materials, labor and overhead costs X G&A cost rates.

- E. profit: The amount calculated by the following.

Profit= the sum of material, labor ,overhead and G&A costs X profit rate.

- (2) The items of material, labor and overhead costs is defined by the Secretary of the Treasury Department.

2. Provision 8 (G&A costs rates & profit rate)

- (1) The G&A cost rates should not exceed the amount which is calculated by the following rates, as appropriate for the contractor:

- A. Facility construction project; 7%
- B. Manufacturing or purchasing:
- Foods and drinks; 12%
 - Cloths leather-products; 8%
 - Wood or wood-products; 10%
 - Paper or paper-products; 12%
 - Chemical-products or plastic-products; 9%
 - Nonmetal-mineral-products; 14%
 - Metal-products; 6%
 - Machine and equipment; 9%
 - Import-products; 8%
 - Services; 5%
 - Others; 14%

- (2) Profit rate should not exceed 10% of total estimated cost of the project before profit.

[Ref. 3: pp. 71-72]

APPENDIX B

ESTABLISHED ACCOUNTING RULES 1201.04-105-2

It prescribes the principles in determining "the estimated cost of the project" by using the cost accounting method.
[Ref. 3: pp. 405-408]

1. Provision 1 (purpose): This provision simply defines the criteria for determining "estimated cost of the project" which can comply with the execution laws of budgeting and accounting.
2. Provision 2 (categories): Cost accounting is subdivided into two categories - manufacturing cost accounting and construction cost accounting.
3. Provision 3 (elements): Cost accounting should distinguish materials, labor, overhead, G&A and profits.
4. Provision 4: Cost accounting institutions available to the government contracting officer is;
 - 1) Research institution which was invested in by the government.
 - 2) College research institution which was established by the board of the director of the college.
 - 3) Accounting institution which has more than 14 CPA's (certified public accountants)
5. Provision 5 (manufacturing costs): Manufacturing costs are the sum of materials costs, labor and manufacturing overhead costs incurred during the manufacturing process.
6. Provision (method): Calculating costs should follow the manufacturing costs accounting worksheet (Appendix C) and show the procedure of calculation and data used.
7. Provision 7 (material costs):
Material costs are divided into direct costs and

indirect costs.

- 1) Direct material cost is the cost of the materials that become an integral part of the project and that can be conveniently traced into it.
- 2) Indirect material cost is the cost of the materials that require great cost or inconvenience if one treats them as direct costs, such as secondary materials or wrapping materials.
- 3) The value of by-products should be subtracted from material costs.

8. Provision 8: Labor costs.

- 1) Direct labor costs is the cost of that labor that can be physically traced to the completion of the projects and that can be traced without undue cost or inconvenience.
- 2) Indirect labor cost is the cost of that labor that can't be physically traced to the completion of the projects or that can be traced only at great cost and inconvenience.
- 3) Indirect labor costs can't exceed the following percentages of direct labor cost:
 - A. Facility construction project; 15%
 - B. Manufacturing or purchasing:
 - Food and drinks; 80%
 - Cloth and leather products; 70%
 - Wood or wood-products; 60%
 - Paper or paper-products; 85%
 - Chemical products or plastic products; 80%
 - Nonmetal mineral products; 80%
 - Metalproducts; 60%
 - Machinery and equipment; 70%
 - Others; 75%

9. Provision 9: Manufacturing overhead costs are allowed only for the following items:

- 1) Water, electric and gas expenses spent on the project.

- 2) Delivery expenses which are not involved in the material costs.
 - 3) Depreciation expenses should be recognized according to the Tax-Law. The Tax-Law defines the depreciation method, acquisition cost and number of years in the service life.
 - 4) Repair expenses spent on the building, machinery and equipment, constructions, ships, long lasting tools which are provided to complete the projects except for capital expenditures.
 - 5) Patent expenses.
 - 6) The expense of developing technology.
 - 7) RD&E expenses.
 - 8) Testing and checking expenses for the quality of the project are permitted only when the contractor requests it outside of the firm.
 - 9) Lease expenses can be included at the amount prorated over the period of the project.
 - 10) Insurance expenses.
 - 11) Pension cost of the accounting period.
 - 12) Warehouse expenses of keeping the materials for the project outside of the firm.
 - 13) Travel expenses.
10. Provision 10 (G&A costs)
- 1) G&A expense is any management, financial, and other expense which is incurred by or allocated to the project and which is for the general management and administration of the project as a whole
 - (1) $G\&A \text{ costs} = (\text{sales expenses} + \text{administrative expenses}) - (\text{advertising expenses} + \text{entertainment expenses} + \text{depreciation})$
 - (2) $G\&A \text{ costs rates} = G\&A \text{ costs} / \text{costs of goods sold.}$

APPENDIX C

MANUFACTURING COST ACCOUNTING WORKSHEET

MANUFACTURING COST ACCOUNTING WORKSHEET

Project:
Standards:

Quantity:
Units:

Items			\$	%	Ref
Costs of goods manufactured	Materials	Direct materials			
		Indirect materials			
		By-products(-)			
		Subtotal			
	Labor	Direct labor			
		Indirect labor			
		Subtotal			
	Over-head	Water, elect& gas			
		Delivery			
Depreciation					
Repair					
Patent					
Know-how					
RD&E					
Testing & checking					
Lease					
Insurance					
Pension					
Warehouse					
Travel					
G&A costs () %					
Profit () %					
TOTAL					

Note: The name of project, quantity required for the project, degree of quality required and measure of units should be described in appropriate place above. [Ref. 3: p. 411]

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